

The High Plains Drifter

NATIONAL WEATHER SERVICE
NORTH PLATTE, NE



Issue VII

Fall 2010

*Prepare Today For Tomorrow—
Are you ready for winter?*

Winter Weather Awareness Day is November 4th

Last winter was a record-breaker for many. Today as we prepare for the 2010-2011 winter season a La Nina weather pattern may provide equal chances for above and below normal temperatures and precipitation.

To date, no snowfall has accumulated this snow season where many, to include the Nebraska Department of Roads, are looking for a milder winter this year.

If you're wondering what this winter may be like read on to gain more information on the weather highlights from last year, outlooks for the 2010-2011 winter, area flooding, space weather and office changes.

Our newsletter kicks off with the Nebraska Winter Weather Awareness Day information that will be held on November 4th. There are a number of activities planned to include a multimedia web briefing, information provided on the web, public information statements and a Nebraska Winter Weather Awareness Newsletter.



<http://www.weather.gov/northplatte>

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Photo courtesy of NDOR

***Nebraska's Winter Weather Awareness Day is
November 4th, 2010***



The National Weather Service, along with the State of Nebraska, has declared **November 4th as Winter Weather Awareness Day**. The National Weather Service is using this day as an opportunity to get information out to the citizens of Nebraska about winter weather, its impacts, and how to protect life and property.

Since 2008 the winter seasons have proved to be tough ones for most of North Central and Western Nebraska. Significant events have led to records broken and new approaches in handling how we approach high impact events such as heavy snowfall and high winds. In December 2010 the Christmas ground blizzard created numerous closed roadways and stranded motorists across central and eastern Nebraska. Keeping the dangers of winter weather in mind, now is the time to prepare for this winter season.

During high impact events the office generates additional information that is delivered through the Internet, in addition to the All Hazards NOAA Weather Radio. The growing use of conference calls, multimedia web briefing and web pages linked on our 'Top News of the Day' provides users the ability to visit at any hour to learn current weather and forecasts as events unfold. If you have any reports of snowfall accumulations or any damage from a winter storm, we would greatly appreciate that information that can be included in event summaries.

We hope that you will find the information informative. Remember to tune into the All Hazards NOAA Weather Radio or a local radio or television station when winter weather strikes. If you have any questions about the information given here, please do not hesitate to contact me.

Teresa Keck, Warning Coordination Meteorologist

National Weather Service

5250 East Lee Bird Drive

North Platte, Nebraska 69101

(308) 532-4936 or visit <http://www.weather.gov/northplatte>

During Winter Be Prepared—Before the Storm Strikes!!

It is very important to be prepared in case a winter storm strikes, and everyone should create a plan for what you and your family will do in case of a storm. Having your car fully checked and winterized, along with having supplies available if you are stranded for a period of time in your home or at work, are things that should be done before each winter season arrives.

At Work and Home

Be aware that you may lose heat, power, or phone service for several days. Make sure you have enough supplies to last if the storm goes on for more than one day.

Make sure to have...

- First aid supplies.
- Flashlight, battery powered AM/FM or NOAA weather radio, and extra batteries.
- Extra food and water. Have high calorie foods that require no cooking or refrigeration.
- Extra medicine and items to take care of infants and the elderly.
- Emergency heating source, such as a fireplace, wood stove, or space heater.
- Heating fuel. Fuel carriers may not be able to reach you for days after a winter storm.
- Fire extinguisher and smoke alarm.
- Shelter, food, and water for any pets.

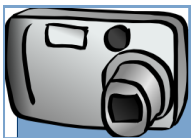
On the Farm or Ranch

- Move animals to sheltered areas.
- Haul extra feed to nearby feeding areas.
- Have plenty of water available for the animals.

In Vehicles

- Make sure to fully check and winterize your vehicle before the winter season.
- Always check the latest weather reports and forecasts before heading out on the road.
- Plan out your trip and let someone know of your timetable and primary and alternate routes.
- Avoid traveling alone.
- Never let your gas tank get close to empty, to avoid ice in the tank and fuel lines.

To learn more safety tips visit: http://www.crh.noaa.gov/lbf/?n=winter_safety



If you have pictures or a video to share of any winter weather events that take place this year, please contact
Teresa.Keck@noaa.gov



With your permission, your pictures and video will provide information and training materials for future storm spotters and meteorologists!

NEBRASKA WINTER WEATHER AWARENESS NEWSLETTER

The six National Weather Service Forecast offices that cover the great state of Nebraska coordinated information for a state Winter Weather Awareness Day newsletter. This year the Nebraska Weather Awareness Committee compiled information gathered from across the state and is hosted by the NWSFO Hastings web site. The newsletter that can be obtained at

<http://www.crh.noaa.gov/gid/?n=winterawareness>

The document provides information that details the record breaking 2009-2010 winter season, winter terminology, safety and travel tips. You can access additional information at the "Top News of the Day" that helps you prepare for your day!

The screenshot shows the National Weather Service website for North Platte, NE. The page features a blue header with the NOAA logo and the text "National Weather Service Weather Forecast Office North Platte, NE". A red arrow points to the "Public Information" link in the "Recently Issued" section. The "Top News of the Day" section lists three items: "Nebraska's Winter Weather Awareness Day is November 4th", "November Snow Climatology for North Platte", and "Climatology of a First Snowfall for North Platte and Valentine". Below this is a navigation bar with links for "Watches & Warnings", "Observations", "Forecast Graphics", "Rivers & Lakes", "Climate", and "Fire Weather". A map of Nebraska is displayed, showing various cities and weather conditions. The map is titled "Click on the map below for the latest forecast." and includes a "Read watches, warnings & advisories" link. The "Hazardous Weather Outlook" is also visible. At the bottom, there are links for "Weather Story", "Radar", "Short Term Graphcast", "Satellite", and "Weather Map".

WINTER OUTLOOK 2010-2011

By Matt Masek, Meteorologist

A moderate to strong La Nina is expected for the 2010-2011 winter. La Nina is when the temperatures of a portion of the south central Pacific Ocean is equal to or less than 0.5 degrees Celsius from average. Current readings are about 1.5 degrees Celsius below average. Even though this is a long distance from Nebraska, the effects of a La Nina can be felt over the state. Local studies suggest that during a La Nina, the winter typically will be warmer than normal and drier than normal.

The Climate Prediction Center released their winter outlook on October 21 and is forecasting a greater chance for above normal temperatures (see image). Average winter high temperatures across western and north central Nebraska fall from around 40 degrees in early December to the middle 30s by mid January, then rebound back into the lower to mid 40s by the end of February. Average low temperatures fall from near 15 degrees in early December to single digits in mid January, then rebound into the upper teens by the end of February. Record highs are in the 60s and 70s during the winter months, while record low temperatures range from around -10 degrees to -35 degrees.

As for precipitation chances, the Climate Prediction Center is forecasting equal chances for above, below, or normal amounts during the winter (see image). In past winters, snowfall has ranged from only a couple of inches to over 35 inches of snow in the three months of December, January and February. However, the snow season usually begins in October and runs through April and occasionally May. Normal snowfall for the entire season is just under 30 inches across southwest Nebraska and closer to 35 inches over north central Nebraska.

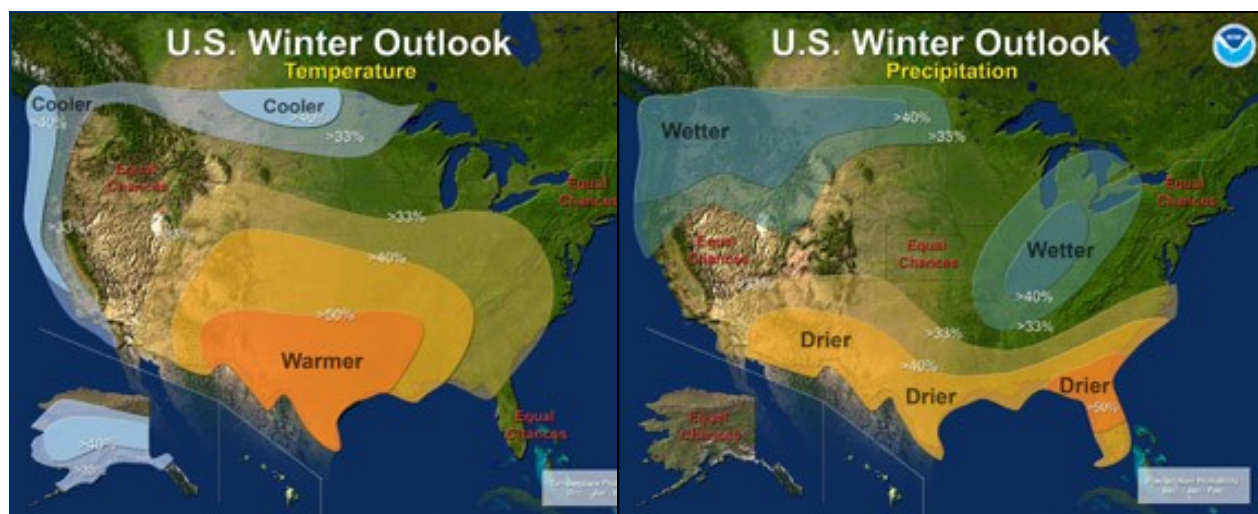
See the North Platte and Valentine Winter Statistics for more averages including maximums and minimums during the three winter months of December, January and February.

<http://www.weather.gov/climate/index.php?wfo=lbf>

The Winter Outlook for December, January & February

Temperatures

Precipitation



RECAP OF 2009-2010 WINTER

By Matt Masek, Shawn Jacobs & Chris Buttler

An early active pattern developed during mid October which brought a series of three strong weather systems into western and north central Nebraska. This early active weather pattern set the stage for a long winter. By the end of October, the city of North Platte had measured 4.29 inches of precipitation which fell mostly as snow. In 2009, the city of North Platte almost doubled the all time record of snowiest October by recording 30.3 inches of snow-fall. The previous record was set in 1969, when 15.7 inches of snow had fallen. Elsewhere across the region, equally impressive snow reports were noted, especially along the Interstate 80 corridor, where residents along the major highway began wondering why "Old Man Winter" put a target on their backs.

During the month of November, "Old Man Winter" took a break, or for that matter, some would suggest that he reloaded and waited for the holiday season to begin. November saw no major storms over the region, with well below normal precipitation and temperatures rising quickly to above normal values. Actually, only one of the 30 days during the month did the average temperature not result in at or above normal values at Valentine and North Platte. Most of the region only recorded a trace of snow during the month. The pleasant weather during the month could be attributed to a persistent ridge over the region, but remember, all good things must end, and boy did it.

The weather during the month of December quickly transitioned to a stormy pattern like was seen during October. An abnormally strong ridge of high pressure built over the Gulf of Alaska which facilitated a broad trough of low pressure across the central and eastern portion of the United States. This pattern shift resulted in above normal precipitation and well below normal temperatures region wide. In Valentine, the average daily temperature was 7.5 degrees below the normal of 23.6 degrees, and in North Platte, the average daily temperature was 8 degrees below the normal of 25.7 degrees. December 2009 will go down as the eighth coldest on record in North Platte and ninth coldest for Valentine. The month of December will also go down as the fifth snowiest on record for North Platte, as 12.3 inches of the white stuff fell during the month; this is eight inches above normal for the month.

The New Year brought in warmer and drier conditions to the region. The persistent arctic air mass that plagued the Plains states during December retreated back into Canada after the first week of the New Year. The Central Plains states enjoyed a relatively quiet weather pattern for the next three weeks as split flow developed and kept stormy conditions well off to the northeast of the region.

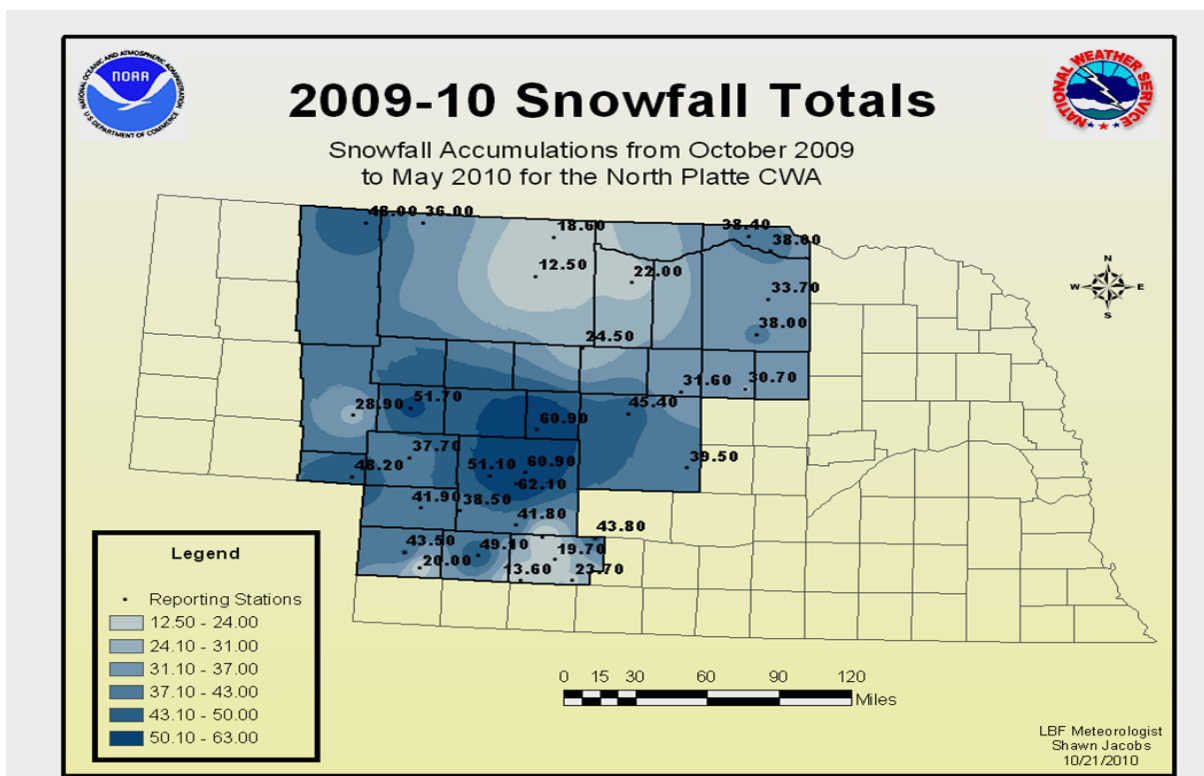
As February began, the split flow pattern continued and lasted for much of the month. While the flow pattern was characterized by numerous weather systems crossing south of Nebraska, enough moisture advected northward to bring several instances of light snowfall to the region, especially along and south of the Interstate 80 corridor. By the time the month of February ended, 12.3 inches of snow had been measured in North Platte,

which is 7.5 inches above normal for the month. Far less moisture fell across northern portions of the region. In Valentine, just 3.9 inches of snow fell, which is 2.3 inches below normal.

The active split flow pattern remained through the first half of March, but then quickly transitioned to a more zonal pattern over the second half. The zonal pattern is not as favorable for precipitation over the region. However, North Platte once again recorded above average precipitation with 2.26 inches of liquid falling from the sky, although, the precipitation fell more so in the form of rain rather than snow. North Platte measured 3.8 inches of snowfall, but this value is 1.4 inches below average for the month. The city of Valentine totaled 1.20 inches of precipitation, which is slightly above the normal value of 1.11 inches.

The trend of above active precipitation continued into April, as a nearly permanent weather feature over the Desert Southwest sent pieces of energy which dropped ample precipitation through the region. This translated to slightly above average temperatures for both Valentine and North Platte as continued cloudiness moderated nightly temperatures. In Valentine, April precipitation amounted 3.11 inches, which is 1.14 inches above normal. However, much of this fell as rainfall, with only trace amounts of snow reported. Nearly the same can be said in North Platte, where 2.97 inches of precipitation fell. Although the precipitation collected was an inch above normal, only 7 tenths of an inch of snow fell.

During the month of May, snow is certainly possible across Western and North Central Nebraska. Just ask the folks in Northern Sheridan County, where four inches of snow fell early in the month. By the time the winter of 2009 - 2010 was over, the city of North Platte measured over 60.9 inches of snowfall, making the 2009 - 2010 winter the second snowiest winter of all time. The city of Valentine did not measure up the snow totals like North Platte did; only 18.6 inches of snow fell for the entire season, making the 2009 - 2010 winter season just out of the top ten least snowiest winter seasons of all time.



WEB SERVICES

By Steve Carmel, Hydrometeorological Technician

The National Weather Service office in North Platte serves up a wide variety of information via the World Wide Web. As a user, you can quickly glean information about Current Hazards and Current Conditions. We also provide comprehensive forecast services, which include public forecasts, aviation forecasts, forecasts for fire weather concerns, and forecasts for severe or winter weather. Other areas covered in-depth via our web page are comprehensive hydrological conditions and forecasts through the Advanced Hydrologic Prediction Service. We also cover Community Outreach events and weather safety in depth.

Remember that topical weather stories or advance notice of incoming storm systems are composed and then placed onto our web site. This is the fastest way for you, our users, to find precipitation and snowfall maps, local storm damage surveys, public information statements, and other viable, important and most of all, timely information for your use.

In our Climate section of the NWS North Platte web page, we provide local and national data through a variety of varying databases. It is simple to query these databases to get a wide variety of climatological information.

Separate sections about weather safety and preparedness are available by just a click of your mouse, with more detailed information about NOAA All-Hazards Weather Radio. Other links are also provided for educational resources, along with an archive of our top news stories. On the bottom left menu side of the NWS North Platte web site, you can provide feedback, or send an email through our webmaster, which will be answered promptly..

Besides just links to a plethora of information – the NWS North Platte also provides a virtual cornucopia of graphical weather products. These include our Graphicast, which is a weather story that mentions the most important weather concerns. Graphical Nowcasts provide a visual cue, and the means to give our users timely and vital weather information. An image map gives an easy way for our users to click on the map on their area of interest to get the latest 7 day forecasts, and detailed point forecasts and easy access to the National Digital Forecast Database, along with links to additional forecasts and information. The latest radar and satellite imagery is always available through the use of the National Weather Service web page.

For national coverage all you need to do is type www.weather.gov into any web browser, then click on the area you seek information about. Should you ever need to contact us for information, suggestions, or feedback - please just email the webmaster at the link provided below:

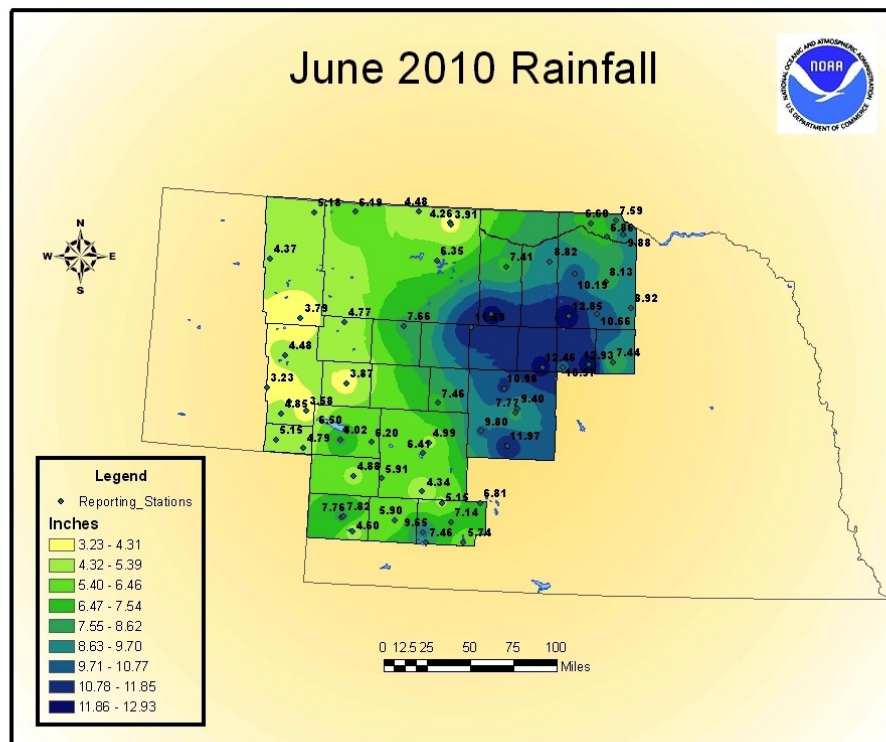
[Email our Webmaster](#)

HEAVY RAINFALL IN JUNE 2010 RESULTS IN FLASH FLOODING, RIVER FLOODING, AND DAM FAILURES

By Kenny Roberg, Lead Meteorologist

A fairly wet spring occurred across western and north central Nebraska. During the spring, average rainfall for March ranged from a half inch to around 2 inches, and from 2 to 4 inches in both April and May. In addition, spring snowmelt also contributed to increased soil moisture and rising river levels by late spring.

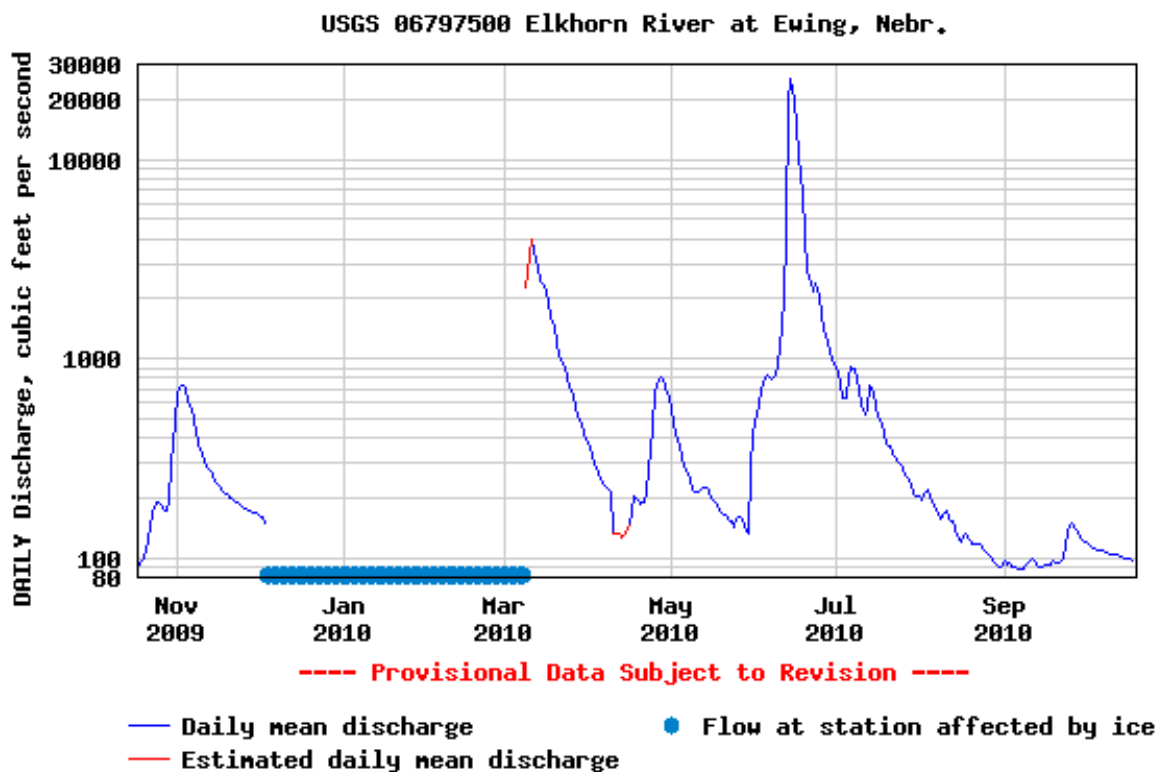
Several episodes of heavy rainfall occurred across western and north central Nebraska in June. As depicted in the map below, rainfall for the month of June ranged from 6 to nearly 13 inches across the eastern half of the area, with the majority of the rainfall occurring between June 3rd and June 14th. The heaviest rainfall also fell across the Elkhorn and Loup River basins, where record flows were observed.



Heavy rainfall In June 2010 Results In Flash Flooding, River Flooding, And Dam Failures Across Western And North Central Nebraska

The heavy rainfall caused rapid river rises. The North Loup river near Taylor reached its highest flow in 73 years of records. The Elkhorn river near Ewing reached its highest stage and flow in 62 years of records. The graph below shows a rapid increase in flow beginning in early June, reaching a peak flow of 25,400 cubic feet per second. This also corresponds to a historic record stage of 13.13 feet on June 14th.

Flooding from the Elkhorn and Loup river systems caused significant damage to property and infrastructure. Along the Elkhorn river near Ewing, a community effort of sandbagging and building a large dike saved much of the town from widespread flooding. In Holt county alone, nearly 30 bridges were washed out, along with numerous roads.



Residents Cope with Flash Flooding and Dam Failures



Flooding in Loup County near the community of Taylor (left photo). A portion of Taylor Bridge crossing the North Loup River was washed out along U.S. Highway 183. (Photo courtesy of the Nebraska State Patrol)

Ericson Dam (right photo) in Wheeler County, failed Sunday evening, June 13th. The spillway began to erode before 8 pm, and the spillway breached thereafter, causing water to drain from the lake. Water from the Cedar river runs freely in this photo. Hopefully, the dam will be repaired.



The Gracie Creek dam (left photo) failed on June 11th after Morgan dam failed upstream, sending floodwaters from the popular trout pond into the Calamus Reservoir near Burwell, Neb. Damage to this road, Nebraska Highway 96, made travel around the lake impossible. (Photo courtesy of the Nebraska State Patrol)

CALLING ALL COOPS

By Mark Byrd, Observation Program Leader

Information for National Weather Service Cooperative Observers



Winter is just around the corner and it is time for us to prepare for the changing weather patterns which will bring cold north winds and snow. Your timely COOP observations are of the utmost importance with accurate coop observations to provide the best picture of the weather and winter precipitation across western and north central Nebraska.



Prepare Eight-Inch Manual Rain Gauge and Place Snowboard(s)



It's time to prepare the 8 inch manual rain gauge for snowfall or freezing precipitation by removing the funnel and inner measuring tube. This is necessary to expose the 8-inch diameter overflow so that the gauge can more accurately catch frozen precipitation.

If you have a snowboard, place it out in an open area and mark the board's location with a flag or some other indicator so it can be found after a new snowfall. It should be located in the vicinity of your station in an open location, but not under trees, obstructions, or on the north side of structures in the shadows.

Note: Check your gauge to make sure there are no leaks. If there are leaks, take appropriate action and notify us immediately so corrective actions can be taken.

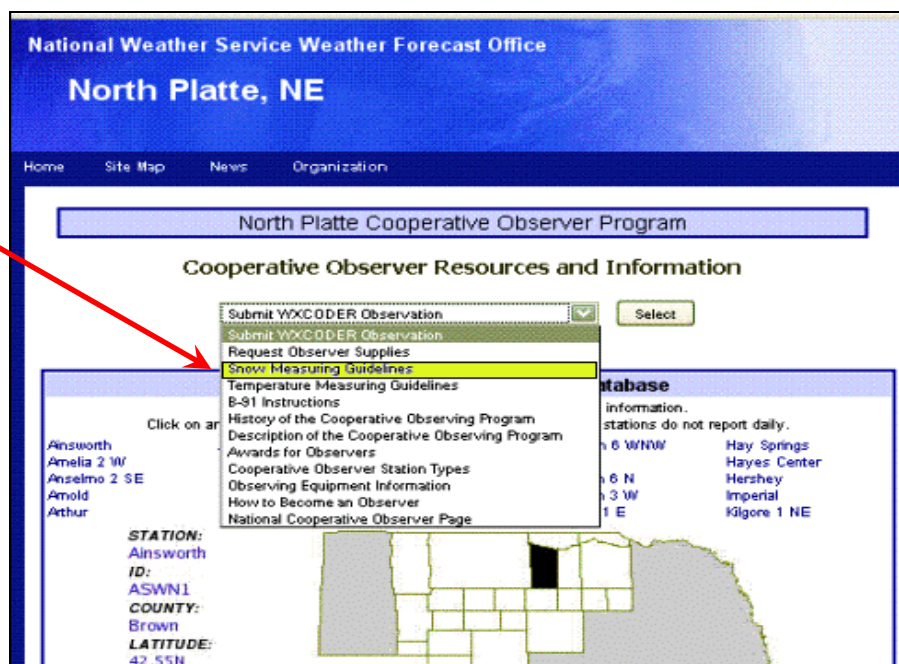
Snow Fall Measurements and Reporting

Once your equipment has been readied for winter, you are prepared for taking snowfall measurements. There are three values when reporting solid precipitation that are needed and include:

1. Measure and record the snowfall (snow, ice pellets) since the previous snowfall observation,
2. Determine the depth of snow on the ground at the normal observation time,
3. Measure and record the water equivalent of snowfall since the previous day's observation.

Remember to record the greatest amount of snowfall that has accumulated on your snowboard (wooden deck or ground if board is not available) since the previous snowfall observation. This measurement should be taken minimally once-a-day (but can be taken up to four times a day, see note below) and should reflect the greatest accumulation of new snow observed (in inches and tenths, for example, 3.9 inches) since the last snowfall observation. If you are not available to watch snow accumulation at all times of the day and night, use your best estimate, based on a measurement of snowfall at the scheduled time of observation along with knowledge of what took place during the past 24 hours. If you are not present to witness the greatest snow accumulation, input may be obtained from other people who were near the station during the snow event. If your observation is not based on a measurement, record in your remarks that the "snow amount based on estimate".

To gain additional information on snow measuring guidelines, please visit the North Platte Forecast Office's Cooperative Observer Program webpage by clicking on the image or entering the link below the image. In addition, the University of Colorado developed a video especially made for National Weather Service Cooperative Observers for snow observations that can be viewed at http://www.cocorahs.org/media/video/measuringsnow/MeasuringSnow_320x240_323kb.wmv



<http://www.crh.noaa.gov/lbf/localinfo/coop/coopdata.php>

The National Weather Service Forecast Office in North Platte would like to thank all our Cooperative Weather Observers for your snowfall observations during the past winter. Without your snowfall reports, verifying these winter events would be hard.

TORNADO EVENTS FROM MAY—OCTOBER

By STEVE CARMEL, HYDROMETEOROLOGICAL TECHNICIAN

This year tornadoes impacted nine counties from May through July. There were eleven confirmed tornado events, but all tornadoes were rated an EF0, except one. An EF2-rated tornado touched down 12 miles northwest of Springview, in Keya Paha County. Each event is provided below starting from May 22nd. The number of weather events and impacts are high with a full detailed listing provided on our web page at <http://www.crh.noaa.gov/lbf/?n=recaplink>

May 22nd – Cherry County. At 845 PM CDT, the tornado touched down over an open field west of Sparks and traveled east where it struck a metal building tearing off the southwest-facing roof. The tornado destroyed a portion of a grandstand and completely demolished a concession stand before lifting 200 yards east of the concession stand. This tornado was rated as an EF0 with a path length just over one mile.

May 22nd – Keya Paha County. At 930 PM CDT, a tornado touched down approximately 12 miles northwest of Springview and traveled northeast for 20 minutes before lifting 11 miles north of Springview. The tornado did extensive tree damage when it touched down, then moved northeast and struck two farmsteads. At the first farmstead, a loafing shed and stock trailer were destroyed, extensive tree and fence damage occurred, and a roof was torn off an old hog building. The most extensive damage occurred north of the farmstead where six rural electric association poles were broken. The tornado continued to move northeast and destroyed a windmill. Then a second farmstead was hit with the tornado destroying a 40 by 60 foot quonset building before the tornado lifted at 950 PM CDT. This tornado was rated as an EF2, with a path length of 9 miles.

June 3rd - Custer County. A brief tornado touched down and crossed the road 1 mile west of Berwyn. A storm chaser's car was hit with debris as the tornado crossed the road. This tornado was rated as an EF0 with a path length of one tenth of a mile.

June 6th - Chase County. The tornado touched down over rural open land about 3 miles northeast of Imperial. The tornado moved southeast and was spotted crossing highway 61 before lifting 4 miles east of Imperial. The tornado was rated as an EF0 with a path length just over 2 miles.

June 11th – Lincoln County. A brief tornado touchdown was reported 1.7 miles southeast of Sutherland with no damage. The tornado was rated as an EF0 with a path length of one tenth of a mile.

June 11th – Lincoln County. A motorist pulled off I-80 and reported a rain wrapped tornado. No damage was reported, and the tornado was rated as an EF0, with a path length of one tenth of a mile.

June 22nd – Sheridan County. A brief tornado was reported by the county sheriff at Highway 20 and 360th Lane, or about 2.1 miles southwest of Rushville. No damage was reported as the tornado touched down over a rural area. This tornado was rated as an EF0.

June 25th – Cherry County. A tornado briefly touched down over open range land, about 13 miles west northwest of Elsmere, with a path length just over nine tenths of a mile. The tornado was rated as an EF0.

June 25th – Thomas County. A supercell thunderstorm produced several funnels prior to tornado development in southwest Thomas County. The tornado touched down 18 miles southwest of Thedford over open range land, moving slowly to the southwest and lifted 19 miles southwest of Thedford. No damage was reported with the tornado. Path length was one mile, with the tornado rated as an EF0. Note: Image insert was provided by Roger and Sue Licking of funnel clouds near Thedford.



July 3rd – Sheridan County. The public reported a tornado touchdown in an open field. The tornado was rated as an EF0 and caused no damages. Path length was just one tenth of a mile.

July 17th – Lincoln County. A brief tornado rated as an EF0, touched down 4.2 miles south of North Platte. No damage was reported.

SPACE WEATHER

By MARK BYRD, OBSERVING PROGRAM LEADER

What is Space Weather, and why is it important to me? Well, in the age of information and global communications, the effects of solar activity have become increasingly more important since nearly all communications are at some point likely to be relayed via satellites in orbit around the world. These communication satellites are directly affected by solar activity, in the vacuum of space some 23,000 miles above the earth's surface.

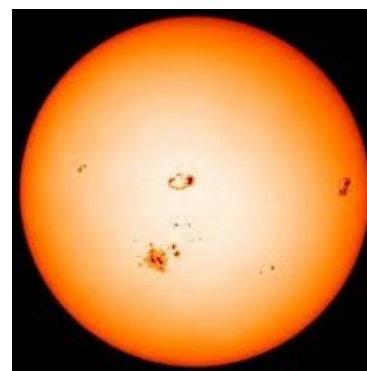


Space Weather is how the Sun and its activity affects the conditions on the sun and in the solar wind, magnetosphere, ionosphere, and thermosphere that can influence the performance and reliability of space-borne and ground-based technological systems and endanger human life or health.

Our Star, the Sun

We all know that the Sun is overwhelmingly important to life on Earth, but few of us have been given a good description of our star and its variations.

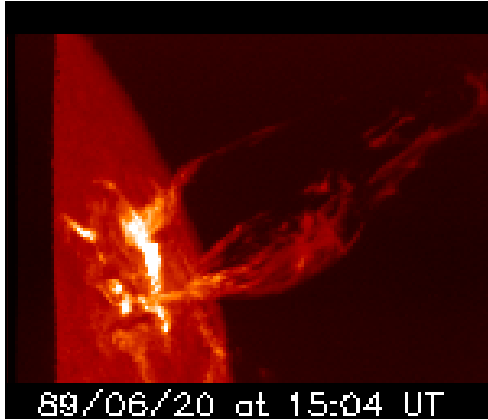
The Sun is an average star, similar to millions of others in the Universe. It is a prodigious energy machine, manufacturing about 3.8×10^{23} kiloWatts (or kiloJoules/sec). In other words, if the total output of the Sun was gathered for one second it would provide the U.S. with enough energy, at its current usage rate, for the next 9,000,000 years. The basic energy source for the Sun is nuclear fusion, which uses the high temperatures and densities within the core to fuse hydrogen, producing energy and creating helium as a byproduct. The core is so dense and the size of the Sun so great that energy released at the center of the Sun takes about 50,000,000 years to make its way to the surface, undergoing countless absorptions and re-emissions in the process. If the Sun were to stop producing energy today, it would take 50,000,000 years for significant effects to be felt at Earth!



Sunspots

Sunspots, dark areas on the solar surface, contain strong magnetic fields that are constantly shifting. A moderate-sized sunspot is about as large as the Earth. Sunspots form and dissipate over periods of days or weeks. They occur when strong magnetic fields emerge through the solar surface and allow the area to cool slightly, from a background value of 6000°C down to about 4200°C ; this area appears as a dark spot in contrast with the Sun. The rotation of these sunspots can be seen on the solar surface; they take about 27 days to make a complete rotation as seen from Earth. Sunspots, dark areas on the solar surface, contain strong magnetic fields that are constantly shifting.

Coronal Mass Ejection (CME)



The outer solar atmosphere, the corona, is structured by strong magnetic fields. Where these fields are closed, often above sunspot groups, the confined solar atmosphere can suddenly and violently release bubbles or tongues of gas and magnetic fields called coronal mass ejections. A large CME can contain 10¹⁶ grams (a billion tons) of matter that can be accelerated to several million miles per hour in a spectacular explosion. Solar material streaks out through the interplanetary medium, impacting any planet or spacecraft in its path. CMEs are sometimes associated with flares but usually occur independently.

Solar Flares

Solar flares are intense, short-lived releases of energy. They are seen as bright areas on the Sun in optical wavelengths and as bursts of noise in radio wavelengths; they can last from minutes to hours. Flares are our solar system's largest explosive events.



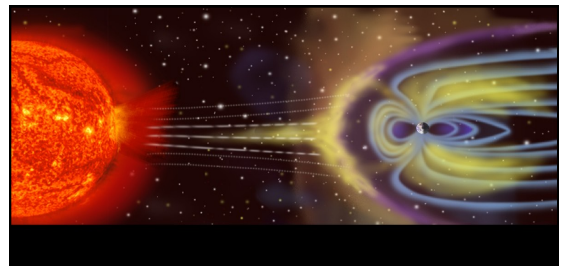
Aurora



The aurora is a dynamic and visually delicate manifestation of solar-induced geomagnetic storms. The solar wind energizes electrons and ions in the magnetosphere. These particles usually enter the Earth's upper atmosphere near the polar regions. When the particles strike the molecules and atoms of the thin, high atmosphere, some of them start to glow in different colors. Auroras begin between 60 and 80 degrees latitude. As a storm intensifies, the aurora spread toward the equator. During an unusually large storm in 1909, an aurora was visible at Singapore, on the geomagnetic equator.

Geomagnetic Storms

Geomagnetic storms are major disturbances of the magnetosphere that occur when the [interplanetary magnetic field](#) turns southward and remains southward for an prolonged period of time. During a geomagnetic storm's main phase, which can last as long as two to two and a half days in the case of a severe storm, charged particles in the near-Earth plasma sheet are energized and injected deeper into the inner magnetosphere, producing the storm-time ring current.



LARGE HAIL

By STEVE CARMEL, HYDROMETEOROLOGICAL TECHNICIAN

In 2009 hail criteria changed for Severe Thunderstorm Warning, where 1 inch hail is the threshold used today. This past severe weather season a number of 2 inch hail reports were received across western and north central Nebraska. However, a record setting hailstone was ultimately discovered in Vivian, South Dakota that measured 8.0 inches in diameter, 18.625 inches in circumference, and weighed in at an amazing 1.9375 pounds! This hailstone broke the previous United States hail size record for diameter that was set on the 22nd of June 2003 in Aurora, Nebraska at 7 inches. Yet the Aurora, Nebraska hailstone still retains the record for circumference at 18.75 inches.

Closer to home the largest hail reported was 2.75 inches, or the size of a baseball, on May 29th 8.7 miles east-southeast of Merritt Reservoir. Pictured right is golfball size hail that is 1.75 inches in size for comparison.



Below is a brief summary of hail reports of 2 inches in diameter or greater which occurred during the time frame from May through October 2010.

Location	Size of Hail	Date	Time of Occurrence
8.7 ESE Merritt Reservoir	2.75"	May 29 th , 2010	646 PM CDT
4.6 SW Hyannis	2.00"	June 4 th , 2010	700 PM CDT
4.3 SSE Dunning	2.75"	June 5 th , 2010	150 AM CDT
0.5 W Hamlet	2.00"	June 22 nd , 2010	903 PM CDT
10.6 NNW Hamlet	2.00"	June 22 nd , 2010	903 PM CDT
1.3 ESE Oconto	2.50"	July 10 th , 2010	700 PM CDT
9.0 SSW Newport	2.00"	July 11 th , 2010	640 PM CDT
5.3 NNE Ellsworth	2.75"	July 11 th , 2010	1045 PM CDT
13.9 N North Platte	2.00"	July 20 th , 2010	126 AM CDT
12.3 NE Maxwell	2.00"	July 20 th , 2010	205 AM CDT
3.6 NE Stuart	2.00"	August 8 th , 2010	250 PM CDT
4.9 NNE Inman	2.50"	September 22 nd , 2010	1105 AM CDT

OFFICE CHANGES

BY BRIAN HIRSCH, METEOROLOGIST IN CHARGE



Teresa may not be well known to you but she has been a strong leader in the office and in the outreach program for many years. She has consistently given spotter talks, school talks and led several outreach events. Teresa most recently led our outreach at North Platte's Rail Fest in September.

Good morning, afternoon, or evening - whenever you read this I want to welcome you to this edition of the High Plains Drifter. I don't write to you very often to keep this mailing concise and focused on Weather, Water, and Climate. However, this issue I have some good news and some bad news for you. First the bad news; Deb Blondin, our Warning Coordination Meteorologist (WCM) for the past 9 years, was promoted to a new position in our Aviation Services Branch and left North Platte this fall. But there is good news; Teresa Keck, the editor of the High Plains Drifter for the past 2 years, has been selected to take on the WCM Role.

Teresa has served as both General and Lead Forecaster at North Platte and is knowledgeable of our office programs and has assisted in community preparedness and outreach for over 14 years. Prior to working in Western Nebraska, Teresa worked at the Weather Service Office in Alpena, Michigan and as a summer student at the Weather Forecast Office in Norman, Oklahoma. Teresa has a Bachelors of Science from the University of Oklahoma and a Masters Degree in Management and Human Resources from the National American University at Rapid City, South Dakota. In addition to her federal service, Teresa served in the U.S. Navy and Naval Reserve for over 12 years.

The WCM position is the greatest position in the NWS in that it connects science and operational forecasts with YOU, the customers of those Weather, Water, and Climate forecasts, warnings, and information. I hope you have an opportunity to send Teresa a quick email of congratulations and explain to her how you use our forecasts or information. If you haven't had contact with the NWS in the past but would like to schedule a visit, please consider sending Teresa a note too so you can talk. Teresa can be reached at email address Teresa.Keck@noaa.gov

And as always – Enjoy the Weather!
Brian Hirsch, Meteorologist in Charge
Brian.Hirsch@noaa.gov



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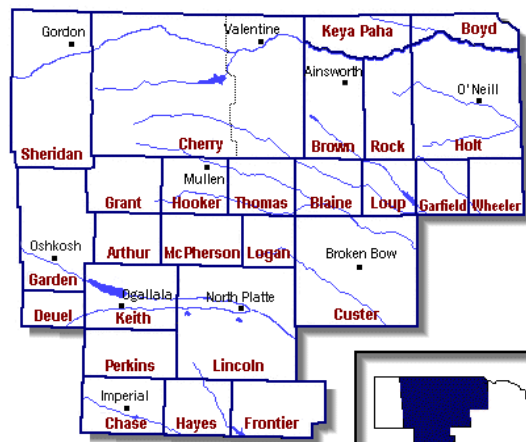
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Comments and suggestions are
always welcome. Your feedback is very important to us!